

0
13
MT

Montana State Hospital infrastruc-
ture study: summary

3542

SUMMARY

MONTANA STATE HOSPITAL

INFRASTRUCTURE STUDY
MONTANA A/E #91-11-01

SEPTEMBER 15, 1992



PROJECT ARCHITECT:
O'NELL AND ZIMET, ARCHITECTS

0
13
MT

59802

NEER:
ONSULTING ENGINEERS

59802

MECH., ELEC., AND FIRE SYSTEMS ENGINEER:
ASSOCIATED CONSTRUCTION ENGINEERS
642 Gallatin Field Road
Belgrade, Montana 59714

CIVIL ENGINEER:
SORENSEN & COMPANY
2500 Murphy
Missoula, Montana 59802

Montana State Library



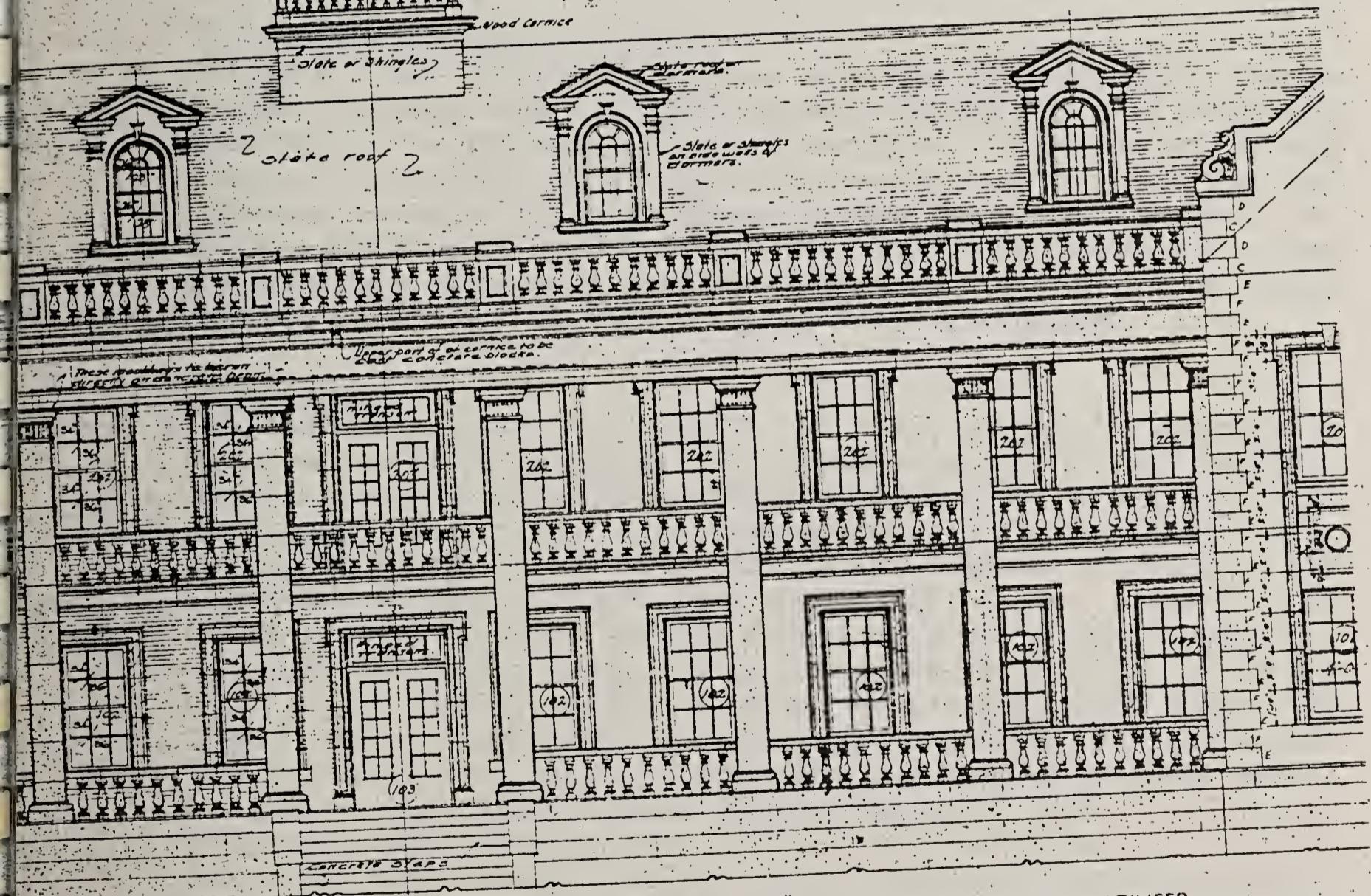
3 0864 1006 9055 4

SUMMARY

MONTANA STATE HOSPITAL

INFRASTRUCTURE STUDY
MONTANA A/E #91-11-01

SEPTEMBER 15, 1992



PROJECT ARCHITECT:
O'NEILL AND ZIMET, ARCHITECTS
502 West Spruce
Missoula, Montana 59802

STRUCTURAL ENGINEER:
BEAUDETTE CONSULTING ENGINEERS
211 North Higgins
Missoula, Montana 59802

MECH., ELEC., AND FIRE SYSTEMS ENGINEER:
ASSOCIATED CONSTRUCTION ENGINEERS
642 Gallatin Field Road
Belgrade, Montana 59714

CIVIL ENGINEER:
SORENSEN & COMPANY
2500 Murphy
Missoula, Montana 59802



Digitized by the Internet Archive
in 2018 with funding from
Montana State Library

<https://archive.org/details/montanastatehosp1992onei>

EXECUTIVE SUMMARY

9/15/92

Preface:

This document is a summation of the physical / technical findings for the Buildings and Infrastructure which are detailed within the "Infrastructure Study for the Montana State Hospital" at Warm Springs and Galen, Montana. Additionally this report, at the request of the State of Montana, discusses specific Observations which prompt Ideas / Conclusions on the part of the Architect & Engineer Team, concerning the many issues centered around the future of the two campuses. However, while the opinions rendered are from experienced professionals, it should be understood that these are only opinions and may or may not have complete factual, economic, or technical feasibility. It was not the intent of this study to make conclusions, but to only document Existing Conditions. Additionally, no consideration has been given to the aspects of political viability. The Architect / Engineer Team have endeavored to present their sincere and honest opinion in an unbiased and independent manner as requested.

The Architect / Engineer Team:

O'Neill & Zimet, Architects of Missoula have been appointed by the State of Montana to produce a professionally prepared study that documents the existing conditions of the Physical Structures, Grounds, and Utility Systems at both campuses. So as to provide a comprehensive study, the Architects, in turn have assembled a team of Consulting Engineers to assist them with an analysis of the technical systems of the buildings and utilities. Specifically, they have contracted with Beaudette Consulting Engineers - Structural, Associated Construction Engineers - Mechanical and Electrical, and Sorenson and Company - Civil.

The Study:

This *Study* is the result of a request by the State of Montana's Department of Corrections and Human Services. This Institution desires to seek information "that will allow it to make rational, informed decisions about the long-term use of the Montana State Hospital." Following this request, the Architects were given an *Outline Program* prepared by the State of Montana, Architecture and Engineering Division. This Program enumerated the basic elements to be included within the *Study*, and also defined the scope of the investigation / reporting. Eventually, through subsequent organizational meetings with the State's project contract persons, the concept for a simple grading system via a "Report Card" was conceptualized, and evolved into the basic "structure" and the "look and feel" of this *Study*. Additionally, the Program provided general background information, campus mission statements, project goals, study components, level of services, time schedule, project budget, review and codes, and project responsibilities. Finally, a List of Buildings and their classification, as well as the extents of the Infrastructure portion of the *Study* was defined. In order to successfully accomplish this project within the stipulated time constraints, it was necessary for the Architects and their Consulting Engineers to quickly become organized and to approach the project with a predetermined methodology. The concept of completing preprepared forms in the field, and using computers to store, organize, and print the information was critical.

Process / Organization:

Generally speaking the Architect's Infrastructure Study has been prepared by following a *Predesigned Series of Steps* which lead from General to Specific.

1. Collect Existing Plan Data / Prior Studies from State of Montana A/E Div.
2. Conduct Site Visits / Building Walkthroughs & Complete Field Data Forms.
3. Review & Analyze Existing Plans, Prior Studies, and Field Data Forms.
4. Research Applicable General Building / Safety Codes.
5. Organize, Compile, and Summarize Data for Draft Report.
6. Prepare Architectural Systems Forms and Life Safety Code Research
7. Incorporate Review Comments by State into Final Report.
8. Prepare Cost Estimates for Remedial Remodeling Construction.
9. Finalize Research, Reviewing and Complete Editing for Final Report
10. Publish Final Report, and Incorporate Subsequent Technical Editing.

As can be seen from the attached Work Product, the Architects have chosen to present the Draft Study information in One simple (albeit large) Volume. This Volume is subdivided into two Sections plus a Table of Contents. Each Section encloses specific information about the Buildings and the Site of each of the two campuses. Specifically, each Campus Section then includes a Campus Map / Building Key and the Data Forms about each Building. As instructed these Buildings and their respective Data Forms are organized into three Building Types: Patient Occupied, Support Services, and Vacant.

Building Fact Sheets - A Summary:

Each individual Building is summarized with a *Building Fact Sheet* which is a compilation of the salient information from each of the six subsequent detailed Building Systems Reports. (Architectural, Structural, Electrical, Fire, HVAC, and Plumbing Systems). Each Building Fact Sheet conveniently displays in summary form factual type information such as Building Title, Photograph, and a Building Description. Additionally, investigatory information concerning the Condition of the Building and its status relative to applicable Building Codes are illustrated. Finally there is an overall Building Report Grade which relates to the preestablished Grading System, as well as a Construction Cost Estimate to bring the Building up to a minimally acceptable level of quality.

"Grading" System:

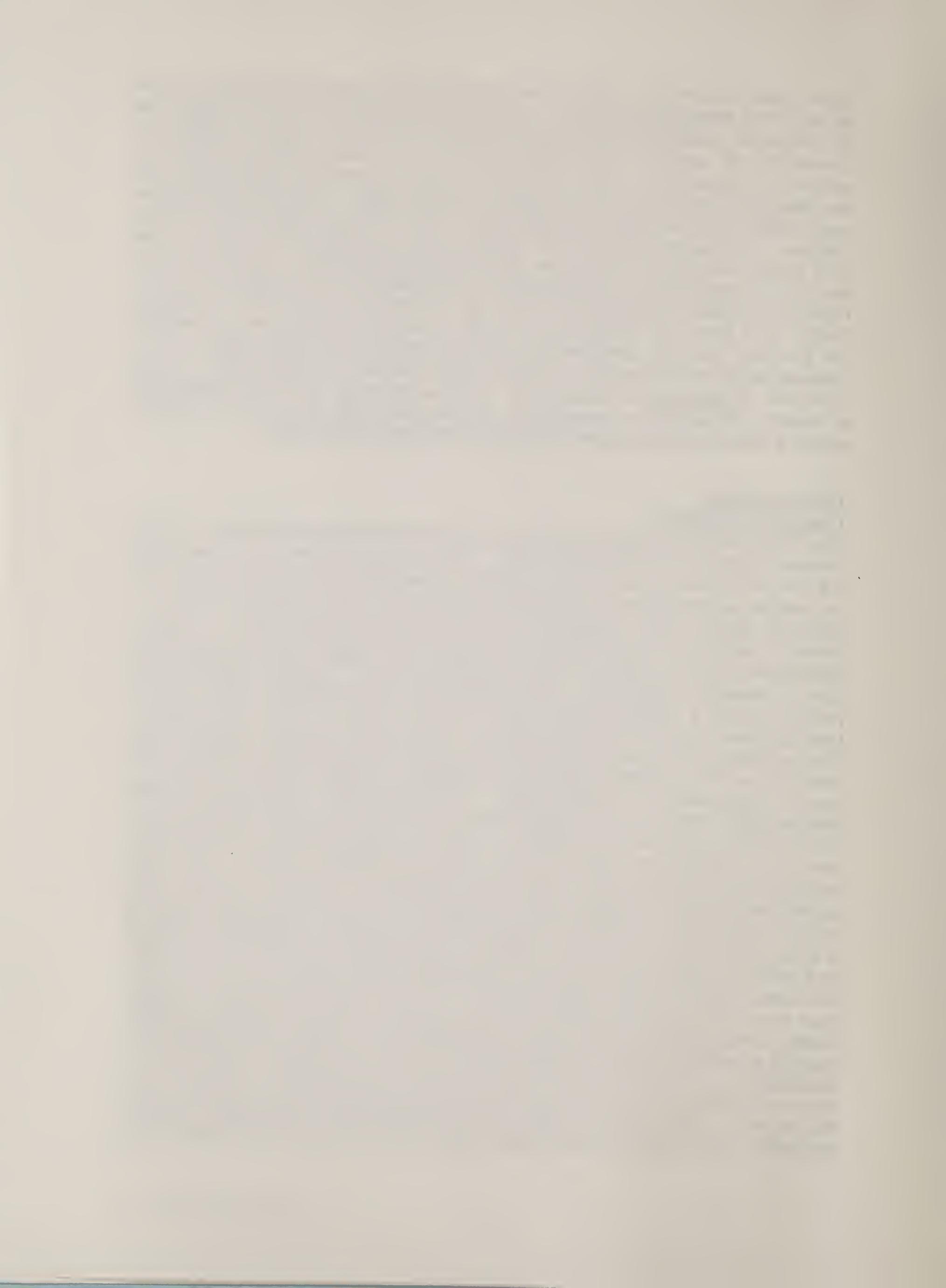
Concerning the *grading theme* which is fundamental to the report: The Architects and their Consultants were asked to provide a "report card" for each Building and Infrastructure System on each Campus. We have chosen to incorporate this idea in a literal manner, as it is simple, straight forward, and in conjunction with the Grade Summary, gives a uniform and relative comparison, between buildings. Please refer to the document Grading System which is found following the Executive Summary. Additionally the grade suggests in plain language the current state of affairs and recommendation for remedial action. Individual Grades were determined by the professional team member who made the field investigation. This grade was reviewed by the Principal in Charge for each firm, and edited given that professionals judgment and experience. The Final Grade for each Building / Site was determined just prior to the publication

of the Final Document. Grades were established by the Architect after a final review of all relative information. It should be noted that the Final Grade is not an arithmetic average of the System Grades, but more a matter of judgment concerning the weight of different factors on each specific building given it's special circumstances. Final Grades do tend to correlate closely with the Architectural Grade which we consider as a base grade. The Structural Grade may modify the base grade dramatically due to safety being an overriding concern. Mechanical and Electrical Grades were also treated as modifiers to the base grade, however only raising or lowering the grade slightly. The outcome of the code research had a marked impact on the Building's Final Grade, as this is a reflection of both it's suitability for Existing Use and a measure of the Building's Safety. The *Estimated Construction Costs* to Remodel / Renovate or Rebuild the Building were not considered in determining the Building's Grade as it is believed to be an independent issue not associated with a report on it's existing condition. **Please note:** A *Grade of "C"* is not a passing grade. The *Grade of "B"* is considered passing or acceptable, and anything less represents a Building which is defective to the degree indicated in the Project fact Sheet.

Observations:

Geographic Location:

The Galen and Warm Springs Campuses are somewhat remotely sited in Central Western Montana along Interstate 90. The remote location is consistent with the historical planning attitude of desiring to quarantine patients physically from population centers due to a concern for the spread of communicable disease. In the early years of both campuses there were treatment programs for physical illness in addition to mental illness. Additionally, we believe there was also an old-fashioned social attitude of "Out of Sight, Out of Mind" when it came to the care of mentally ill patients. There seemed to be an unspoken prejudice and perhaps even a disgust against patients and their families with socially unacceptable diseases, ironically many of which now have cures or treatment. Consequently the location of both Galen and Warm Springs as facilities had much to do with a specific desire for remoteness. Today there is no longer this need, requirement, or desirability. Communicable diseases are often preferentially treated in advanced medical facilities within cities, where the finest of staff and equipment are available. There is a strong desire to "mainstream" mentally handicapped patients to the maximum degree possible, and hence society has come along way toward recognizing and accepting the responsibility to treat the mentally ill patient as with physical illness's. Finally at the time of the original siting of both campuses, there probably was not the concern for Energy as a costly and valuable resource. Whether it be gasoline for automobile travel to and from the remote locations, or natural gas / electricity to heat / power the facilities, or even peoples valuable time to travel to the remote location, in years past these were not significant concerns. At this time all that has changed. Energy Costs, and Staff Time are a critical concern in terms of the expense of running a Medical Facility. Communication with the institution's administrative headquarters in Helena, and the somewhat close proximity to services in Anaconda / Deer Lodge (Also considering the Shared Services Agreement with the Montana State Prison) make the existing general geographic location desirable. The location is reasonably close to the centroid of the entire State



relative to the convenience of your patient base. However, we would question the wisdom of both the split facility concept as well as the divorce from an Urban Environment. While the physical settings on both campuses are somewhat natural and pleasant, and views to the mountains and the surrounding valley are beautiful, there remains a feeling of being outcast and forgotten which is not believed to be conducive to the recovery process. It is believed that being in both a campus like setting and part of the social fabric of a community is more beneficial and consistent with modern health care.

Architectural / Built Environment:

There is widely accepted school of thought concerning the attitude of the Patient, and whether the Built Environment affects their own ability to heal themselves. Concerning both the Professional Staff and the Patient, it is believed that the well being, quality of life, and health of any human being is related directly to the quality of the Architecture / Built Environment. The Existing Building's and the Landscape of both Campuses are relatively grim in terms of providing a therapeutic atmosphere, and are not conducive to the Recovery Process of the Patient nor do they contribute any emotional support to the Professional Staff. They border on lifeless not lifefull. They tend to elicit dispair, forboding, decay, and even possibly (metaphorically) hasten the desire to want to retreat and even retire from life. This problem in our mind as Architects is serious and we fear very consequential to both Staff and Patients at this time.

Jokingly.... we were told time and time again "that if you are not crazy when you reach Galen / Warm Springs, you will be soon". Or..... Question - Who ever leaves Galen / Warm Springs? Answer - Nobody! While we are not qualified to comment on the Medical / Operational / Staffing issues, we are saying that the Physical Facilities are not now contributing positively to the "Health Care Process".

General Comments - Buildings:

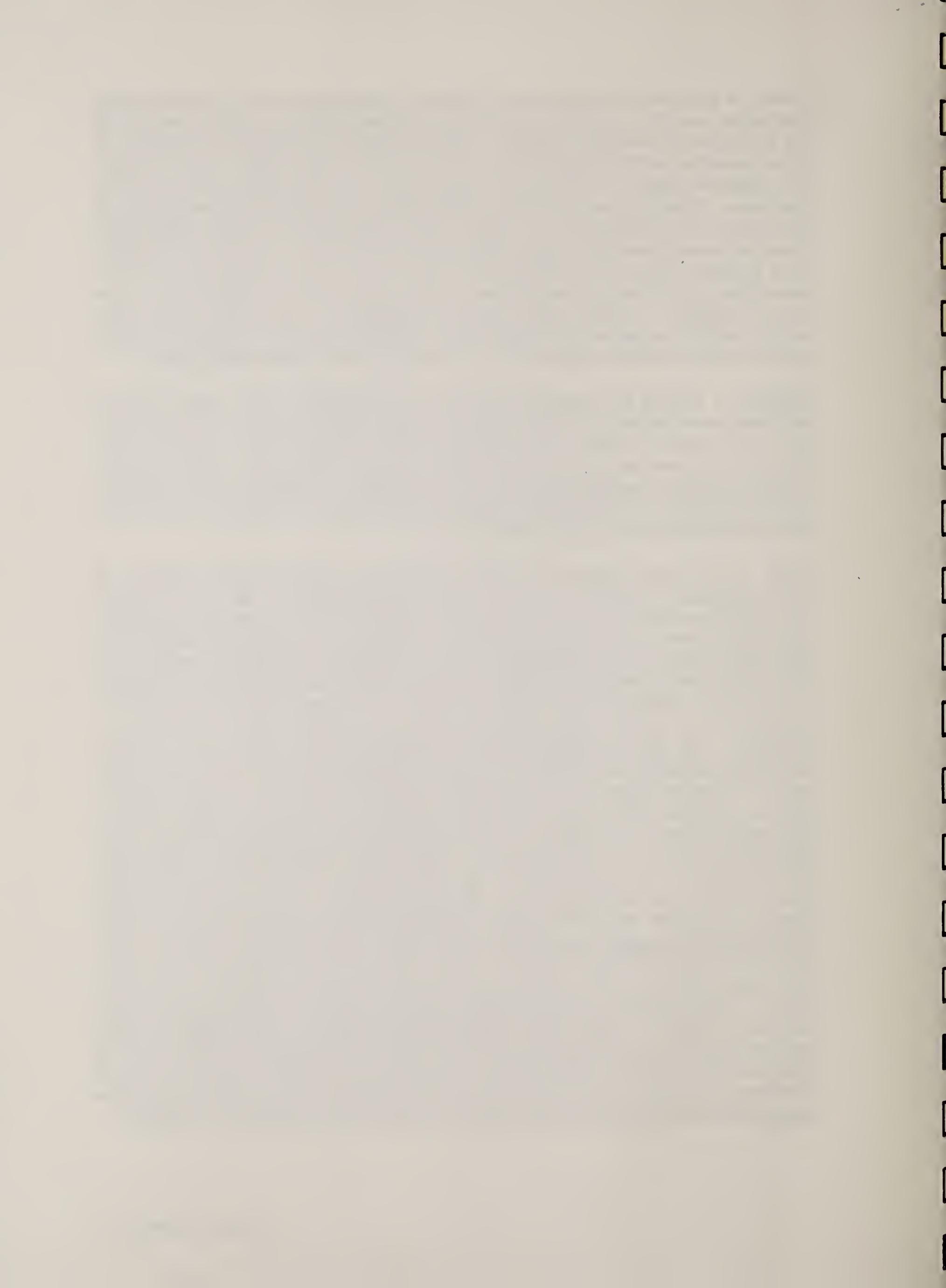
First; On both Campuses, there are substantial deficiencies with respect to several of the Patient Occupied Buildings, specifically buildings being used to House Patients. Certain Patient Occupied Buildings appear to be well below commonly accepted design standards for Psychiatric Health Care Facilities while others are barely acceptable. The new Forensic Treatment Facility is the only building that might approaches a modern Psychiatric Health Care Facility. Additionally, a great number of Support Services Buildings on both Campuses, have similar deficiencies which render them in certain cases unacceptable for their Current Uses.

Second; Observations in general raise the question that there seem to be a disproportionate number / aggregate size of spaces designated for Support Service Buildings, in comparison to the quantity / sizes of the Patient Occupied Buildings. Additionally, it would appear that the few occasional remodeling and maintenance projects, and the necessary resources for these projects are presently being expended disproportionately to maintain marginal Support Buildings vs. Patient Occupied Buildings, at both campuses.

Third; It is unfortunate that some of the most structurally sound, architecturally interesting, simple to maintain, and well designed buildings constructed during the WPA Period have been vacated. This in contrast to the current habitation of a few experimental buildings built in the late 1950's or early 60's, which despite their modern pretense are the most bizarre and unmaintainable buildings on the campuses. Typically, the roofs of the older buildings have been left unmaintained for many years allowing their interiors to be destroyed by water penetration. However, even given their advanced state of deterioration several buildings still have excellent rehabilitation potential. Most would need very extensive interior renovation if they were to be utilized for the purpose of housing patients or the care of patients. While most all these buildings are structurally sound, they would need to be gutted and refitted with entirely new finish systems, insulation systems, door / window systems, and new Mechanical and Electrical Systems.

Fourth; It should be emphasized that no investigation was made into the Asbestos contained within the Buildings at Warm Springs / Galen, as it was not a part of the "Scope of Work" of this project, however a great deal is visibly obvious. There is a separate study which delineates the extents of Asbestos. The Costs for properly / legally disposing of Asbestos as a hazardous material is not included in our Cost Estimate for Remedial Construction found within this report, and as such should be added to the costs found herein.

Fifth; The existing licensing of various programs contained within Buildings at both Campuses is complex, and somewhat unexplainable. In terms of making a correlation between the services offered for a program within a facility, which has an existing license, and the type of facility categorized through the Building and Life Safety Codes, it is not possible in several instances to make this match. We found ourselves reviewing buildings under an assumed building type endeavoring to match this building to the type of facility it is now currently licensed as. Sometimes it is obvious that the Building was not designed for the current use or program. The affect of this generally speaking, is that some of the Patient Occupied Buildings are illegal in terms of requirements for the minimal floor areas in Patient Rooms, and the required number / type of Patient Support Spaces at critical areas such as Nurse Stations. Because the floor areas in Semiprivate Rooms is deficient, the only solution would be convert every Semiprivate Room to a Private Room. While this is desirable for a Long Term Care Facility, it is not required for an Acute Care Hospital as the maximum possible Bed Count will by necessity drop dramatically. *For Example:* At Galen Campus - Crockett and Terrill Wings. Existing Semiprivate Rooms are 176 sq.ft. "Guidelines for Hospital Construction" stipulate for a Rehabilitation Facility, which is the current use of Floors 1 and 2, a minimum of 100 sq.ft. per bed for multiple bed rooms, therefore there should be at least 200 sq. ft. per room. There is not this floor area, therefor to become legal all rooms used for Long Term Care must be Private Rooms. While this is may be appropriate and desirable from the patients viewpoint, administratively it does negatively reduce the total number of allowable beds per floor from 52 to 31. On the other hand the 3rd Floor of Crockett is licensed as an Acute Care Hospital and the 52 beds would be appropriate and legal as this is the purpose for which this building was designed.



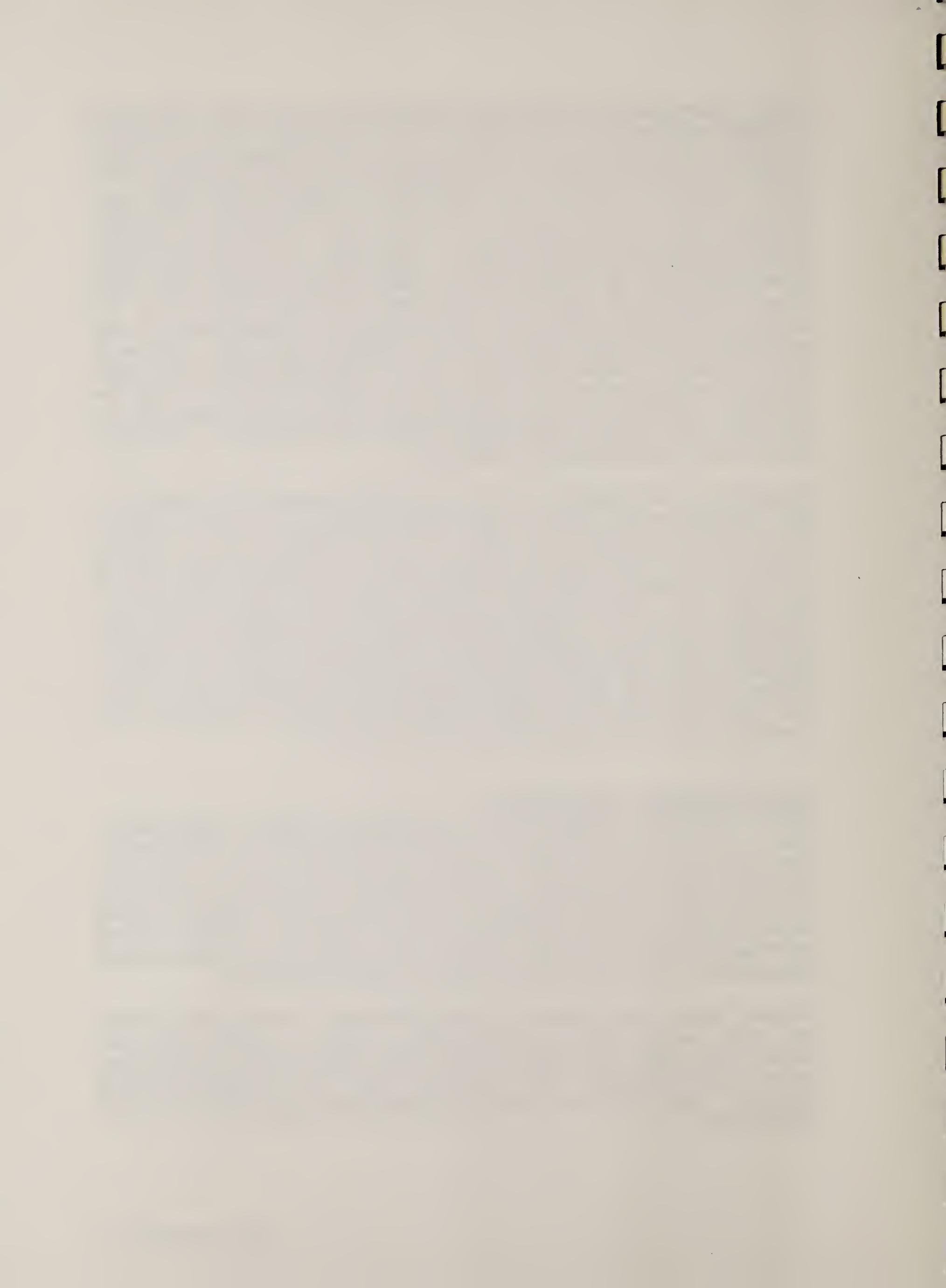
Sixth; In general the major buildings, those which patients occupy, are not well designed for patient care. For example, what is considered to be an Acute Care Hospital at the Galen Campus, Third Floor, Crockett Wing meets only a modest number of the requirements in the "Guidelines for Hospital Construction." This facility should be classified as an Infirmary, or perhaps some other more appropriate title. It is not a Hospital. There are no other Department Units other than the Nursing Unit(s) and hence the services offered, and procedures possible within the facility are extremely limited. Additionally, with regard to the other older Buildings, we believe that there are inherent design problems which make interior remodeling to meet current requirement very difficult and costly. *For Example:* Many of the Patient Care Buildings have Rest Rooms which are only accessed from the corridor not the patient room itself as is required. Additionally there are usually no separate Elevator Lobby, no designated Smoke Containment / Evacuation Compartments within buildings or properly constructed / rated Exit Corridors. These types of projects involve what we call "core remodeling" which is associated with a change in the fundamental layout of the building. This type of work is usually highly disruptive and expensive.

Seventh; The "State Antiquities Act", and that fact that many of the Buildings on both campuses may be deemed to be "Historically Significant", add an aspect of complexity to the decision as to what to do with Buildings which are not fully utilized, or when they have been deemed surplus. The Law says that Buildings which are registered or listed on the National Register of Historic Places must be preserved. It is believed that no buildings on either campus are presently registered, however, it is believed that many will be deemed historically significant, and hence the State Historic Preservation Officer is expected to zealously protect the buildings from being demolished or altered in a negative fashion. This in fact, while everyone's intentions will be altruistic, never the less shall limit what can be done with these Buildings, and are a real factor to be considered when discussing the future of both campuses.

General Comments - Infrastructure:

First; At the Warm Springs Campus: In general, all systems including Sewer, Water, and Roads are suffering from a fairly significant amount of deterioration due to their age and the lack of periodic maintenance. At this Campus the problem is further complicated, in that the Campus is so spread out, and while certain Buildings could be vacated, the same is not true with regard to the long underground branch lines which need to be left intact to serve those buildings which are still apart of the system. There is no consolidation of vacated buildings geographically so as to limit the extent of the infrastructure systems.

Second; At the Galen Campus: In general all systems including Sewer, Water, and Roads are generally in good condition. Galen is a smaller and more consolidated campus, and hence the care of the systems and the maintenance seems more manageable, and therefore has been more comprehensive and successful. Please see the detailed Civil Infrastructure Report found at the back of this report.



Estimated Construction Costs:

The Dollar Figures as itemized in the Cost Summary Sheets have been calculated on the basis of bringing the individual Building or Infrastructure System up to a legal and "minimally acceptable condition". These costs do not bring the Building or System up to a new / ideal functional condition. These costs, also, do not include any allowance for aesthetic improvements either to the interiors or exteriors of the Buildings. As it was difficult to project the future of the vacant buildings, we calculated the cost of demolition of most substantial Vacated Buildings, and then show additive costs for Renovating the indicated Buildings.

Ideas / Conclusions:

We are aware that this Infrastructure Study is not an end in itself, but a tool to help the State of Montana come to a decision as to..... "What to do with the Galen and Warm Springs Facilities". After being closely immersed in this project, for four months, the Architect's could not help considering what the possibilities for future action might be, or at least what options exist.

We believe there are essentially 4 Options:

Option 1 - Status Quo - Do Nothing

Option 2 - Consolidate Facilities at Warm Springs Campus

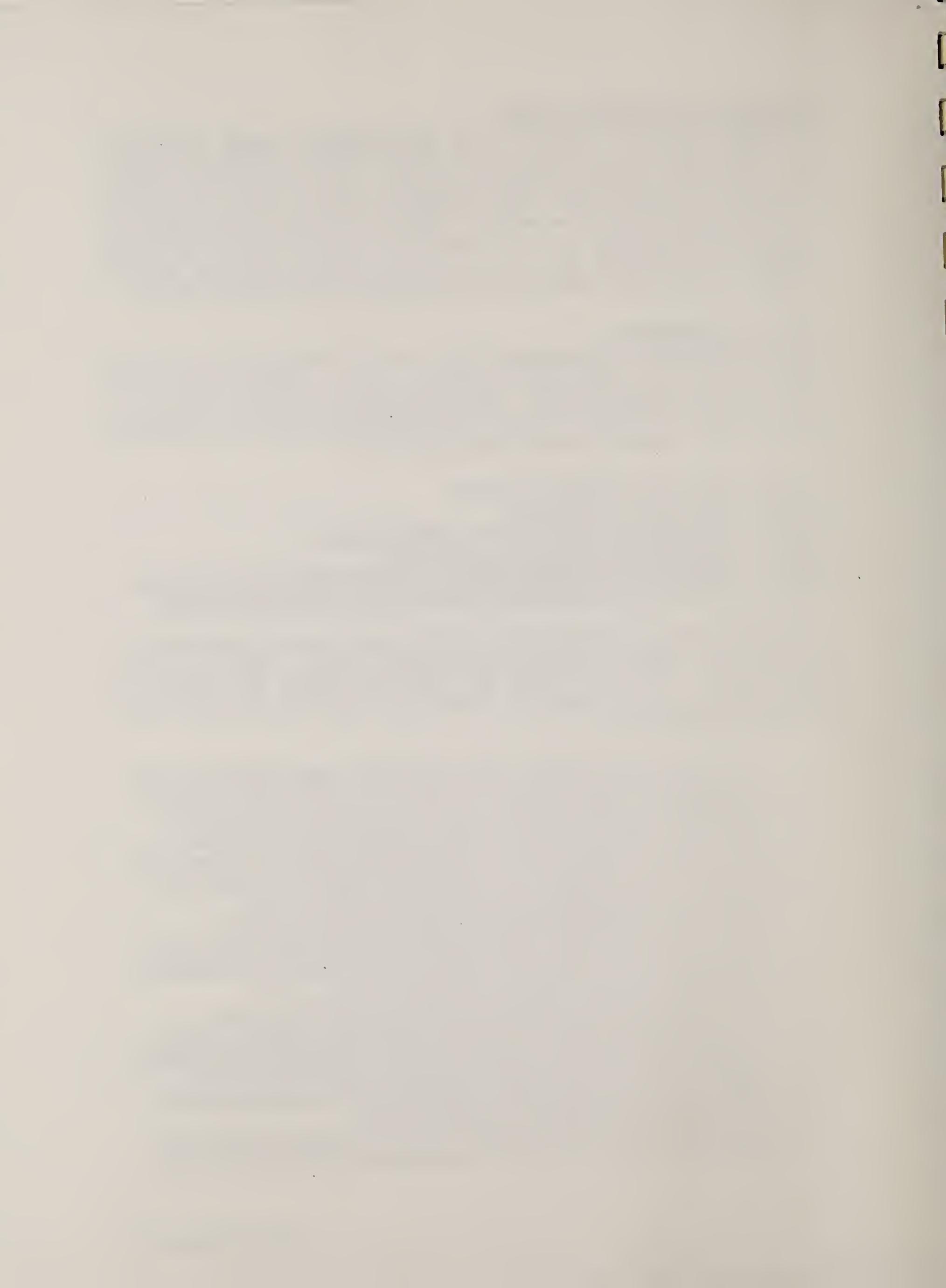
Option 3 - Consolidate Facilities at Galen Campus

Option 4 - Abandon Both Existing Facilities - Rebuild Montana State Hospital

Option 5 - Hybrid Option - Consolidate Campuses / Rebuild Most of Hospital

In our opinion there is really only one long term, satisfactory, and comprehensive, solution. This is Option 4 - Abandon Both Existing Facilities - Rebuild Montana State Hospital. Any other Option will either not address the problem, or postpone dealing with the problem to a later time. Some reasons why we offer this recommendation are:

- ✓ Estimated Cost for Remedial Work could build a New 200 Bed Hospital.
- ✓ New Facility could be Designed to match the State's Medical Program.
- ✓ Infrastructure would be Consolidated and Simplified or Eliminated.
- ✓ The Space Utilization would be much more Efficient / Cost Effective.
- ✓ The amount of Support Services would be Proportional to Patient Load.
- ✓ Problems of Downsizing / Use of Surplus Buildings will be a Non Issue.
- ✓ Expenses for Energy Usage would be Substantially Lessened.
- ✓ Expenses for Redundant Staff could be Eliminated or Lessened.
- ✓ Most Existing Buildings are past their Projected Life Cycle - Little Waste.
- ✓ Revenue may be realized from Real Estate sale of one / both Campuses.
- ✓ Dealing with Historic Buildings will be a Non Issue.
- ✓ New Building could be Master Planned for Up or Down Sizing.
- ✓ A New Site within the Existing Region should lesson Political Pressures.
- ✓ A New Building / Building Complex would be designed to meet Codes.
- ✓ Asbestos Clean Up Actions could possibly be Deemed Unnecessary.
- ✓ Threat of Law Suit from Defective Facility Design would be decreased.
- ✓ Staff Satisfaction and Moral would be Improved.
- ✓ New Facility would Foster Greater Desirability for Physician Relocation.
- ✓ Mission Statement of Montana State Hospital would be better served.

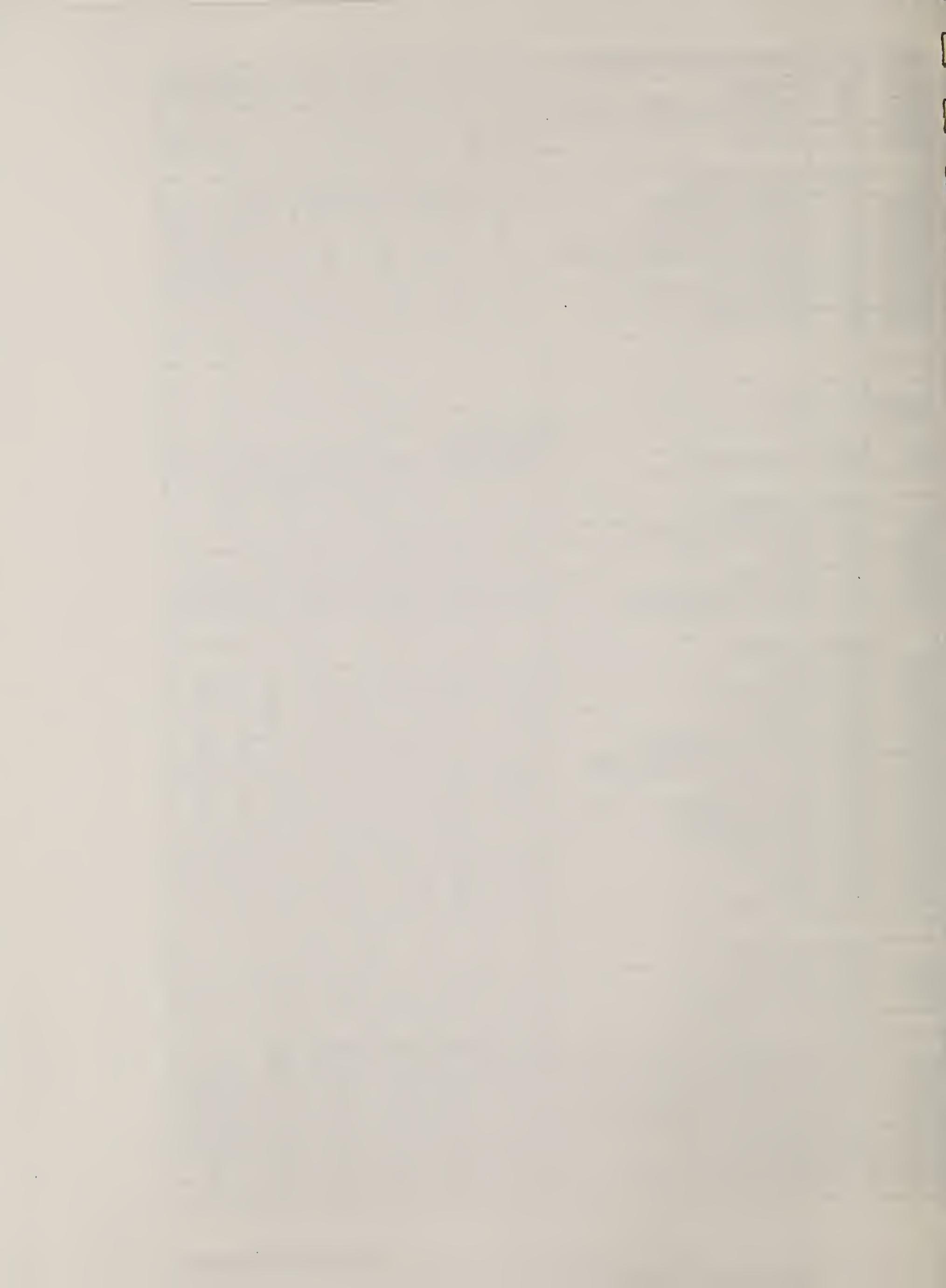


GRADING SYSTEM

A+	Excellent Condition
A	Very Good Condition
A-	Good Condition
B+	Better Than Average
B	Average
	← *"Benchmark" Grade
B-	Less Than Average
C+	Needs Improvement
C	Needs Major Improvement
C-	Needs Substantial Improvement
D+	Almost Complete Replacement
D	Needs Complete Reconstruction
D-	Complete Rebuild
F+	Should Be Demolished
F	Should Be Demolished Immediately
F-	Demolish Due To Safety Concerns

* Note: Recommended modifications to buildings are intended to improve the condition of the building to a "B" or an "Average" level.

BUILDING & INFRASTRUCTURE GRADE SUMMARY							DATE: 9/1/92	
CAMPUS:		"WARM SPRINGS"						
		SYSTEM GRADES						
NO.	TYPE	BUILDING NAME	ARCH.	STR'L	MECH.	ELECT.	FIRE	OVERALL
PATIENT OCCUPIED								
WS-1	P.O.	DINING AND OT/PT	B- / F+	C+ / B-	B- / B	A- / A	C / C	B- / D-
WS-2	P.O.	FORENSIC TREATMENT				(Assumed)		A-
WS-3	P.O.	INTAKE UNIT	C+	A-	A	A-	B+	C+
WS-4	P.O.	MULTI-PURPOSE BUILDING	C+	B-	A-	B+	C	C+
WS-5	P.O.	RECEIVING HOSPITAL	F+	C-	C+	B+	C-	F+
WS-6	P.O.	SPRATT BUILDING	B	B+	B+	A	B+	B
WS-7	P.O.	TRADE SCHOOL	F+	C-	D+	B	D	F+
WS-8	P.O.	WARREN BUILDING	D+	C-	B	C+	B+	C-
SUPPORT SERVICES								
WS-9	S.S.	ADMINISTRATION	C	C+	B-	B	B	C+
WS-10	S.S.	ADMINISTRATIVE ANNEX	C-	C-	B	C+	C-	C
WS-11	S.S.	BOILER PLANT	C	C+	B	B	D-	C
WS-12	S.S.	CARPENTRY SHOP	C+	B+	C+	B	B	C+
WS-13	S.S.	COMMISSARY	F+	C-	B	B	C+	F+
WS-14	S.S.	COTTAGE SOUTH OF CAMPUS (3)	B-	B	NA	NA	NA	B-
WS-15	S.S.	DOCTOR'S RESIDENCE (1)	B	B-	NA	NA	NA	B
WS-16	S.S.	FIRE STATION	C+	B+	B-	B-	C-	C+
WS-17	S.S.	KITCHEN AND FOOD SERVICE	D / F+	B- / B+ / B	B-	C	D	D / F+
WS-18	S.S.	LAUNDRY	C-	C	C-	B-	B	C-
WS-19	S.S.	MAIN GARAGE	C	C-	C-	B-	B	C
WS-20	S.S.	MAINTENANCE OFFICE / SHOPS	C+	C+	B	B	B	C+
WS-21	S.S.	MECHANICAL REPAIR	F+	C-	C-	B-	C-	F+
WS-22	S.S.	PAINT SHOP	C+	C+	C+	B	D-	C+
WS-23	S.S.	PINTLAR LODGE	B+	B+	B	B	C	B+
WS-24	S.S.	PLUMBING SHOP	C+	B	B	B	B	C+
WS-25	S.S.	RECEIVING WAREHOUSE	B+	A-	B+	A	C	B+
WS-26	S.S.	RESIDENCES - EAST OF CAMPUS (2)	B-	B	NA	NA	NA	B-
WS-27	S.S.	RESIDENCE - NW OF CAMPUS (1)	NA	NA	NA	NA	NA	B-
WS-28	S.S.	RESIDENCES (2)	B	B	NA	NA	NA	B
WS-29	S.S.	STAFF DUPLEXES	B to C-	B to B-	NA	NA	NA	B to C-
VACANT BUILDINGS								
WS-30	V.B.	BOLTON	C-	B-	D-	D	D	D+ to D-
WS-31	V.B.	BUTCHER SHOP	F	D+	D-	D-	D-	F-
WS-32	V.B.	CHILDREN'S UNIT	D+ to F	C-	D-	D	D-	D- to F
WS-33	V.B.	LINEN SUPPLY	D-	D+	D	C	D-	D-
WS-34	V.B.	LUMBER STORAGE	D	C-	D-	B-	B	F+
WS-35	V.B.	OLD GENERAL HOSPITAL	C+	C	D-	D	D-	C- to D+
WS-36	V.B.	RESIDENCE- N. OLD GENERAL HOSP.	C+	C	NA	NA	NA	C
WS-37	V.B.	SCANLAND APARTMENTS	B-	C	D	D	D+	C+
WS-38	V.B.	STORAGE BARN	C-	D	D	B-	D	D+
WS-39	V.B.	STORAGE BUILDING / ADDITION	C- / F+	B / D	D	B-	D	C / F+



SUMMARY
CIVIL INFRASTRUCTURE

GENERAL

Sewer, water and road systems of both campuses were investigated by inspection of facilities which were available without the benefit of excavations or internal inspection of any of the components as requested by the State. The report of the condition and necessary repairs to the systems is therefore limited to what was visible through these inspections or based on review of maintenance records and discussion with the facility maintenance personnel. This type of inspection review, while providing a good overall scope of services necessary to generally repair the system, does not provide for detailed information on individual specific repairs or, in some cases, sufficient information to determine the repairs which may be necessary. This especially would apply to buried sewer and water mains of which the existing condition could not be determined.

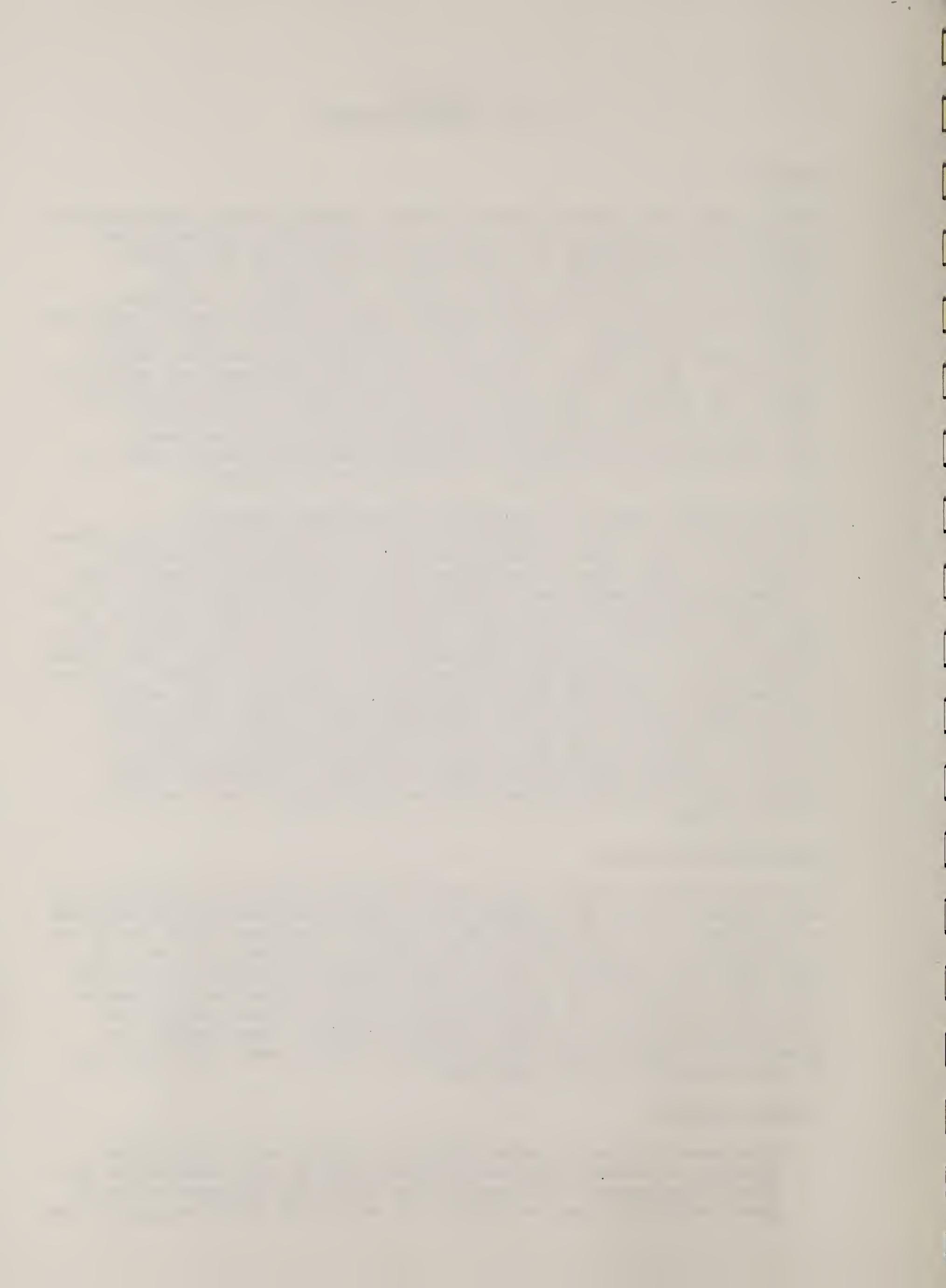
The following report and resulting recommendations for improvements and their estimated costs is intended to bring these facilities up to what we have called a serviceable condition (Grade B). This term is utilized and is intended to imply that if these improvements were completed the facilities will be in an acceptable condition which will provide service and function as they were intended. This does not mean that the facilities were brought up to a "like new condition" or to a condition that would be desirable if unlimited funding was available. However, in our professional judgement this serviceable condition will provide for systems which will allow continued use of the facilities without concern of failure of this infrastructure. There will still be a requirement for operation and maintenance budgets similar to those that exist today in order to maintain these systems in a condition that will be serviceable for the life of the facilities.

WARM SPRINGS CAMPUS

The Warm Springs campus is located over an extensive geographical area which results in a large civil infrastructure which requires maintenance. In reviewing these systems, consideration was given to reducing the extent of the facilities, however, due to the uses that are currently made of the campus buildings, it is not possible to reduce any of the existing facilities and estimates have been enclosed for improvements based on maintaining the existing facilities to their current extent. The systems in general all suffer from deterioration due to their age and lack of maintenance in some instances.

• Sewer System

The sewer system at Warm Springs consists of a collection system and sewage lagoons located east of the interstate for final treatment. The sewage lagoon system appears to be in good condition and, based on our review of the testing of the



effluent, the system is meeting the discharge permit requirements and providing adequate treatment for the sewage at Warm Springs. The current size of these lagoons exceeds the required capacity for the sewage currently being generated at Warm Springs and adds to the treatment that is currently being provided. There are some minor improvements to structures at the lagoon that should be made and removal of brush and continued maintenance to prevent weed growth which could result in the deterioration of the dike system as had occurred in the past.

The collection system is in poor condition at Warm Springs as evidenced by the many manholes which are deteriorated due to their age, apparent blockages or lack of smooth transitions in the manhole inverts. There is also evidence of infiltration in at least two instances into the system due to the large flows noted in the pipes which do not have very large service loads connected to them. At this time, removal of this infiltration has not been recommended due to the capacity of the lagoon system. The collection system improvements which have been recommended will provide for correction of the deteriorated condition of the manhole system and provide for inspection of the main lines and correction of any problems which are found. These improvements should provide for a system that provides for collection and disposal of the sewage and allow for maintenance access and service as required.

- Water System

The water system was found to be in fair condition and consists of two wells, one elevated storage tank and the distribution network. The major items in the water system which will require correction are the repairs to the water storage tower which were recommended in an inspection completed several years ago, and installation of a main with hydrants to provide fire protection. These improvements are necessary to bring the tank up to current safety standards and assure the quality of water stored in the tank. The potable water system is not currently protected from the landscaping irrigation system by backflow preventers or isolation which is required to preclude any contamination of the water system. These improvements are necessary to assure the safety of the system. The other items which have been recommended for improvement to the water system are basically deferred maintenance items which should be completed in order to provide for a system which will be serviceable and maintainable in the future.

- Road Systems

The road systems at Warm Springs are in poor condition and have deteriorated due to the lack of maintenance or, in some cases, where the systems were not paved originally in areas which should have paved road systems. The improvements which have been recommended are paving of these roads which should be done in order to reduce dust generation and the current

movement of dirt into buildings and facilities, and repair of existing paved streets which may be brought into serviceable condition by patching and chip sealing. These improvements although not bringing the system to a new condition will provide for replacement of streets which have the major traffic loads and bringing the other streets into a condition which will be more maintainable than currently exist. The low volume of traffic on many of these streets does not justify complete reconstruction of the streets, curbs or sidewalks at this time. In addition, peripheral service roads have been left as gravel since they have low volumes of traffic and are primarily used for refuge collection and emergency service vehicles.

Storm drainage, which would normally be collected at many locations throughout a roadway system and disposed of on-site or at a centrally located point, does not exist on the Warm Springs campus. The current system provides for runoff along the surface of the streets and eventual disposal in grassed or low areas. This does not appear to be causing a problem within the street systems, so it has been deemed acceptable as it currently exists. If major reconstruction of areas of the campus were anticipated or required, a storm drain system would be recommended.

GALEN CAMPUS

The Galen campus is a small compact area with less extensive civil facilities. These facilities were found to be in generally good condition with a few exceptions which have been noted in the detailed report. The improvements which have been recommended will bring this campus to a serviceable condition which we have defined as a level which provides for the intended use of the facility and provides a facility which may be maintained under normal operating and maintenance procedures.

• Sewer System

The sewer system consists of a collection system and a package treatment plant. The treatment plant is intended to discharge effluent into the Clark Fork River in accordance with its design and discharge permit. A break in the discharge line was found prior to its entrance into the Clark Fork River and the effluent is actually being discharged into a wet area approximately 2,000 feet from its intended discharge point. This is one of the items that must be corrected in order to be in compliance with the existing approved design and discharge permit. A review of the tests completed at the treatment plant indicate the treatment plant is providing adequate treatment to meet the discharge permit requirements. The treatment plant does require additional drying beds for disposal of sludge and these have been provided for in the recommended improvements.

The collection system is generally in fair to good condition and the improvements which have been recommended will correct deficiencies in some of the manholes and inverts of the

manholes which have deteriorated with age and should be repaired to allow for adequate maintenance. In addition, the inspection of all of the lines has been included as part of the recommendations which would provide for a review of the existing main system and correction of any deficiencies which are found.

- Water System

The water system at Galen consists of two wells, an elevated storage tank and a distribution network. The system was found to be in fair to good condition and the improvements recommended to the distribution system consist of deferred maintenance items and the construction of one section of main line which would provide for a loop system and improve distribution and water flow in the system and a main with hydrants to provide additional fire protection. One of the two wells is located in the existing boiler room which is not desirable and, in addition, does not allow for proper injection of chlorine into the system which is necessary to assure disinfection of the water and provide for continued protection of the stored water. In order to correct this situation, the improvements provide for construction of a chlorine room which would allow injection into the system and construction of an additional water main which will allow the chlorine to be introduced into the water system prior to its use or storage. The water system is not protected from all of the landscape irrigation system and the recommended improvements provide for installation of backflow preventers and isolation of the irrigation system to protect from cross-contamination of the water supply.

- Road System

The road system at Galen was found to be in fair condition with the exception of the concrete streets which are badly deteriorated. The enclosed improvements recommend removal and reconstruction of these concrete street areas. The remainder of the roadway system will be patched where required and a final chip seal provided to bring the system up to a serviceable condition. These improvements will provide a system which will be easier to maintain and eliminate the current deteriorated conditions.

Storm drainage, which would normally be collected at many locations throughout a roadway system and disposed of on-site or at a centrally located point, does not exist on the Galen campus. The current system provides for runoff along the surface of the streets and eventual disposal in grassed or low areas. This does not appear to be causing a problem within the street systems, so it has been deemed acceptable as it currently exists. If major reconstruction of areas of the campus were anticipated or required, a storm drain system would be recommended.

